1 **CASCADED OR COMBINED, DIVERSE CONVERSIONS IN WHICH THE FREQUENCY OR PHASE OR COMBINED CONVERSION IS WITHOUT INTERMEDIATE CONVERSION TO D.C.**
2 .Current and phase (e.g., D.C.-Ph1-Ph2)
3 ..Phase 1 to phase 2 to D.C.
4 ...Single phase to polyphase to D.C.
5 ...With interphase transformer
6 ....Including plural anode/single cathode device
7 ...With dynamic rectifier in phase 2 to D.C. stage (e.g., commutator type)
8 .Current and frequency (e.g., f1-f2-D.C.)
9 .Combined phase and frequency conversion (i.e., Ph1f1-Ph2f2)
10 ..By semiconductor device converter
11 ..By electron tube converter
12 ..By saturable reactor converter
13 **CURRENT CONVERSION**
14 .Cryogenic
15 .Including D.C.-A.C.-D.C. converter
16 ..Having transistorized inverter
17 ...Bridge type
18 ...Single-ended, self-oscillating type
19 ....With automatic control of the magnitude of output voltage or current
20 ...Single-ended, separately-driven type
21.01 ....With automatic control of the magnitude of output voltage or current
21.02 .....For resonant-type converter
21.03 ......Having particular zero-switching control circuit (e.g., for quasi-resonant converter, etc.)
21.04 .....For forward-type converter
21.05 ......Having digital logic
21.06 ......Having synchronous rectifier
21.07 ......Having feedback isolation (e.g., optoisolator, transformer coupled, etc.)
21.08 ......Having feedback winding inductively coupled to inverter inductive device (e.g., tertiary winding, etc.)
21.09 ......Having output current feedback
21.1 ......Utilizing pulse-width modulation
21.11 ....Having particular pulse-width modulation circuit
21.12 .....For flyback-type converter
21.13 ......Having digital logic
21.14 ......Having synchronous rectifier
21.15 ......Having feedback isolation (e.g., optoisolator, transformer coupled, etc.)
21.16 ......Having feedback winding inductively coupled to inverter inductive device (e.g., tertiary winding, etc.)
21.17 ......Having output current feedback
21.18 ......Utilizing pulse-width modulation
22 ...Double-ended (i.e., push-pull), self-oscillating type
23 ....With automatic control of the magnitude of output voltage or current
24 ...Double-ended (i.e., push-pull), separately-driven type
25 ....With automatic control of the magnitude of output voltage or current
26 .....Utilizing pulse-width modulation
27 ..Having thyristor inverter (e.g., SCR, etc.)
28 ...With automatic control of the magnitude of output voltage or current
29 ..Having electron-tube inverter
30 ...Single-ended type
31 ...Double-ended type (i.e., push-pull)
32 ..Rotary-commutator-type inverter
33 ..Vibrator-type inverter
34 .Including an A.C.-D.C.-A.C. converter
35 ..For transfer of power via a high voltage D.C. link (i.e., HVDC transmission system)

36 ..For change of phase (e.g., number of phases)
37 ..By semiconductor rectifier and inverter
38 ..By electron tube rectifier and inverter
39 .With means to introduce or eliminate frequency components
40 ..In inverter systems
41 ...By pulse modulation technique (e.g., PWM, PPM, etc.)
42 ....Including notching
43 ...By step-wave, amplitude summation technique
44 ..In rectifier systems
45 ...Including means for reducing ripples from the output
46 ....With ripple responsive, automatic control
47 ....With low pass L or LC filter
48 .....For semiconductor rectifier
49 .With starting arrangement
50 .Including automatic or integral protection means
51 ..For high voltage D.C. transmission systems
52 ..For rectifiers
53 ...Semiconductor type
54 ....Thyristor
55 ..For inverters
56.01 ...Transistor inverter
56.02 ....Bridge type
56.03 .....Having current protection (e.g., over current, short, etc.)
56.04 ......Including short protection across a series-connected pair of transistors (e.g., shoot-through protection, etc.)
56.05 .....Having voltage protection
56.06 ....Double-ended type
56.07 .....Having current protection
56.08 .....Having voltage protection
56.09 ....Single-ended type
56.1 .....Having current protection
56.11 .....Having voltage protection
56.12 ....Transient protection (e.g., snubber, etc.)
57 ...Thyristor inverter
58 ....Bridge type
59 .With voltage multiplication means (i.e., V out > V in)
60 ..Including semiconductor means
61 ...For rectifying
62 .With voltage division by storage type impedance (i.e., V out)
63 .With means to selectively provide D.C. of either polarity
64 .With interphase transformer
65 .Having plural converters for single conversion
66 ..Including plural anodes and single cathode (e.g., vapor arc device)
67 ..Plural rectifiers
68 ...In series (e.g., series SCR’s, bridge circuits, etc.)
69 ...In parallel
70 ....Including semiconductor device
71 ..Plural inverters
72 ...Master-slave
73 .Constant current to constant voltage or vice versa
74 .With condition responsive means to control the output voltage or current
75 ..Including inductive integral sensing and control means (e.g., ferroresonant circuit)
76 ..Including integral sensing and control means for rectifier
77 ...With semiconductor conversion means
78 ..Cooperating separate sensing and control means
79 ...Including plural sensing or control means
80 ....With transistor as control means in the line circuit
81 ....By rectifier
82 .....With inductive control means in the line circuit
83 .....With electron tube or valve as control means in the line circuit
84 ...For rectifier system
85 ....With thyristor control means in the line circuit
86 .....External to rectifier (e.g., pre or post regulation)
87 .....For plural phase to D.C. rectifier
88 .....For full wave rectifier with at least 1 three electrode device

89 ....With transistor control means in the line circuit
90 ....With inductive control means in the line circuit
91 .....Saturable reactor (e.g., magnetic amplifier)
92 ......In plural phase to D.C. system
93 ......With plural control windings
94 ....With electron tube or valve control means in the line circuit
95 ...For inverter
96 ....With thyristor control means in the line circuit
97 ....With transistor control means in the line circuit
98 .....For bridge-type inverter
99 ....With electron tube or valve control means in the line circuit
100 .With manual control of the output voltage or current
101 .With auxiliary bucking or boosting EMF
102 .Using dynamoelectric machine converter
103 ..Plural collector type
104 ...Having plural field windings
105 ...Having auxiliary motor drive
106 .By circuit interrupter type
107 ..Rotating
108 ...Rectifier (i.e., A.C.-D.C.)
109 ...Inverter (i.e., D.C.-A.C.)
110 ..Vibrating
111 .Using electronic tube converter
112 ..With gap in open atmosphere
113 ..With cathode element control
114 ..In rectifier systems
115 ...With retarding or delaying control means
116 ...With discharge control means (e.g., grid)
117 ....D.C. bias control
118 ....Phase angle control
119 ....Particular waveform grid excitation
120 ..In inverter systems
121 ...With discharge control means (e.g., grid)
122 ....Grid-like electrode
123 .Using semiconductor-type converter
124 ..In chopper converter systems
125 ..In rectifier systems
126 ...Diode
127 ...Transistor
128 ...Thyristor
129 ....Plural phase to D.C.
130 ....With magnetic control means
131 ..In transistor inverter systems
132 ...Bridge type
133 ...Double ended (i.e., push-pull) type
134 ....Separately driven
135 ..In thyristor inverter systems
136 ...Bridge type
137 ....D.C. to plural phase
138 .....With commutation means
139 ...Double ended (i.e., push-pull) type
140 .Using impedance-type converter
141 .With cooling means
142 .With means to connect the input to diverse power sources
143 ..110/220 Volts A.C. in, constant 110 Volts D.C. out
144 .With conductive support mounting
145 ..Adapted for use with alternators
146 .Encased in plug housing
147 .Integrated circuit
148 **PHASE CONVERSION (PH1-PH2) WITHOUT INTERMEDIATE CONVERSION TO D.C.**
149 .With automatic voltage magnitude or phase angle control
150 .By dynamoelectric machine converter
151 .By electron tube converter
152 .By induction-type converter
153 ..Transformer type
154 ...Stationary
155 ....With passive phase shift element
156 .By passive phase shift elements
157 **FREQUENCY CONVERSION (F1-F2) WITHOUT INTERMEDIATE CONVERSION TO D.C.**
158 .By varactor
159 .By semiconductor converter
160 ..Thyristor type
161 ...Positive and negative groups
162 ....Including blanking or inhibiting means
163 ..Transistor type
164 .With automatic voltage magnitude control

165 .With automatic frequency control
166 .By electron tube converter
167 ..With discharge control means
168 ...Including plural anodes and single cathode device (e.g., vapor arc device)
169 ...Thyratron type
170 .By induction-type converter
171 ..Transformer
172 ...Saturable core
173 ..LC circuit
174 ..Dynamoelectric machine
175 ...Motor generator type
176 ...Including induction motor
177 .By circuit interrupter converter
178 **MISCELLANEOUS**

FOREIGN ART COLLECTIONS

FOR **CLASS-RELATED FOREIGN DOCUMENTS**
CURRENT CONVERSION
.Cryogenic
..Including D.C.- A.C.- D.C. converter
...Bridge type
FOR 100 ....With automatic control of the magnitude of the output voltage or current (363/21)
FOR 101 ...Semiconductor type (363/56)